

REMARKS

Claims 52-58 will be pending upon entry of this Amendment. This Amendment cancels claims 1, 10 and 47-49. This Amendment adds claims 57-58. This amendment amends claim 54. In the Office Action, pending claims 52-56 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. patent 6,331,365 (“King”). As discussed below, this rejection is respectfully traversed.

I. The King Reference

Some of the relevant disclosures of the King reference have been previously set forth in applicant’s previous response of June 19, 2006 and will not be repeated here. The Current Office Action (at page 3) states that:

Fig. 4 . . . shows the first rechargeable battery (24) connected in parallel to the second rechargeable battery (48). The Boost converter [34] does not open or close the parallel connection between the two batteries.

Applicant agrees that, for purposes of this present response, Fig. 4 of King does show a “parallel connection” between the battery 24 and battery 48, at least when blocking diode 26 is in a state closes the parallel connection. However, applicant respectfully disputes the Current Office action’s characterization of boost converter 34. Specifically, applicant respectfully submits that boost converter 34 does open and close the parallel connection between the batteries for reasons that will now be discussed.

Boost converter 34 of King includes blocking diode 26. King describes the operation of the blocking diode:

However, such a battery can only supply power to the load and cannot receive regenerative energy during vehicle deceleration. For this reason, a unidirectional conductor shown for example as a diode 26 is connected in the positive bus of the DC link 14 between the mechanically rechargeable battery and the inverter 18 so as to preclude power flow to the mechanically rechargeable battery.¹

¹ While we are discussing the Fig. 4 embodiment of King here, the explanation of the operation of the blocking diode 26 is given in connection with the Fig. 2 embodiment.

(King at col. 3, lines 40-45.) Accordingly, the “unidirectional conductor,” or, more specifically, the blocking diode 26 of Fig. 4 acts like a switch that allows the parallel connection between batteries 24 and 48 to remain open when power flowing from battery 24 to battery 48, but acts as a switch and disconnects this parallel connection under operating conditions where power would otherwise flow through the parallel connection from battery 48 to battery 24. For this reason, blocking diode 26 is a switch element on the parallel connection between batteries 24 and 48 that opens and closes the parallel connection depending upon the operating conditions.

King explains that this switch element is important to include because “such a battery [24] cannot receive regenerative energy during vehicle deceleration.” (King at col. 3, lines 38-40.) This caution teaches away from any devices where there is a non-switchable parallel connection between a power battery (which generally can handle regenerative pulses at its terminals) and a higher density energy battery (which is generally damaged by these pulses of electrical energy).

II. Claim 52 and Its Dependent Claims

Claim 52 sets forth a vehicle that recites “a first battery circuitry structured to electrically connect the first battery and the second battery in parallel so that there are no switch type electrical elements for opening and closing the parallel connection of the first battery circuitry.” The Current Office Action asserts that Fig. 4 of King shows such circuitry at boost converter 34. However, as explained above, boost converter 34 of King includes blocking diode 26, which is a switch type element that does open and close the parallel connection. Furthermore, the Current Office action does not provide any argument that it would be obvious to modify the Fig. 4 embodiment of King so that it met the above-quoted claim language relating to the absence of switching elements. For these reasons, it is respectfully submitted that claims 52 to 54 are patentable over King.

III. Claim 54

Claim 54 (as amended) further recites “the second battery circuitry is further structured so that electrical energy from the regenerative braking system is received by the first battery

circuitry to recharge at least second battery.” This claim language is inconsistent with the teaching of King. Specifically, King states that “such a battery [24] cannot receive regenerative energy during vehicle deceleration.” (King at col. 3, lines 38-40.) King thereby teaches that high energy density batteries, such as its battery 24, cannot receive regenerative braking energy. While this may reflect conventional wisdom, it strongly teaches away from the above-quoted language of claim 54. This is an additional reason that claim 54 (as amended) is patentable over King.

IV. Claim 55 and Its Dependent Claim(s)

As set forth in the previous response:

Claim 55 is directed to vehicle having two batteries with respective voltage ranges as recited in claim 55. Claim 55 further recites that the respective voltage ranges are “substantially overlapping.” This overlapping relationship between voltage ranges is not taught or suggested by King. For this reason, claims 55-56 are patentable over King.

Although the Current Office Action rejects claims 55-56 based on King, applicant does not understand the Current Office Action to provide specific reasons for the rejection, cite any disclosure in King of the claimed overlapping battery voltage ranges, or set forth reasoning for modifying King to meet the overlapping voltage range language of claim 55. For these reasons, it is respectfully submitted that claims 55-56 are patentable over King.

V. Support For Newly-Added Claims 57-59

Exemplary support for newly added claims will now be set forth in table form.

Claim(s)	Support In the Specification In the Specification (as Originally Filed)
57	Page 36, lines 5-15; page 37, lines 15-18; fig. 3 at ref nums 20 and 30; and Fig. 4.
58	Page 36, lines 5-15; page 37, lines 15-18; fig. 3 at ref nums 20 and 30; and Fig. 4.

VI. Patentability Of Newly-Added Claims 57-58

Claim 57 sets forth a vehicle that recites "a first battery circuitry structured to electrically connect the first battery and the second battery in so that a terminal voltage across the first terminals will remain in operation approximately equal to a terminal voltage across the second terminals in the same manner as if the terminals of the first battery and the second battery were connected by a closed parallel electrical connection." This is not taught or suggested by the various embodiments of King, which all have elements such as boost converters interposed between the analogous batteries. For example, Fig. 4 of King includes a boost converter between its energy battery and power battery. For this reason, claims 57-58 are patentable over King.

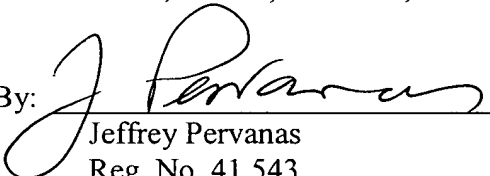
VII. Conclusion

It is submitted that the foregoing amendments and/or explanations are sufficient to put this application in condition for allowance. If the Examiner disagrees, the Examiner is encouraged to call the undersigned at 1-416-961-5000 to expeditiously resolve any outstanding issues.

It is hereby petitioned under 37 CFR 1-1336 that the response term of this application be extended, as necessary, to permit entry of the present amendment. The Commissioner is hereby authorized to charge any necessary extension fee to deposit account no. 18-1350, under an order number corresponding to attorney docket number P63902.

Respectfully requested,

DASGUPTA, Sankar; JACOBS, James K.; and BHOLA, Rakesh

By: 
Jeffrey Pervanas
Reg. No. 41,543

Encl.: Ret. Ack. Card.; Form PTO/SB/30; RCE Fee US \$395
Riches, McKenzie & Herbert LLP
2 Bloor Street East, Suite 1800
Toronto, Ontario, M4W 3J5, Canada
Tel. (416) 961-5000
Fax: (416) 961-5081